

Pipe Dreams

The drying up of the Aral Sea – a major environmental catastrophe of the late twentieth century – is deeply rooted in the dreams of the irrigation age of the late nineteenth and early twentieth centuries, a time when engineers, scientists, politicians, and entrepreneurs around the world united in the belief that universal scientific knowledge, together with modern technologies, could be used to transform large areas of the planet from “wasteland” into productive agricultural land. Though ostensibly about bringing modernity, progress, and prosperity to the deserts, the transformation of Central Asia’s landscapes through tsarist- and Soviet-era hydraulic projects bore the hallmarks of a colonial experiment. Examining how both regimes used irrigation-age fantasies of bringing the deserts to life as a means of claiming legitimacy in Central Asia, Maya K. Peterson brings a fresh perspective to the history of Russia’s conquest and rule of Central Asia.

MAYA K. PETERSON is Assistant Professor of History at the University of California, Santa Cruz.

Studies in Environment and History

Editors

J. R. McNeill, *Georgetown University*
 Edmund P. Russell, *Boston University*

Editors Emeritus

Alfred W. Crosby, *University of Texas at Austin*
 Donald Worster, *University of Kansas*

Other Books in the Series

- Debjani Bhattacharyya *Empire and Ecology in the Bengal Delta: The Making of Calcutta*
- Chris Courtney *The Nature of Disaster in China: The 1931 Yangzi River Flood*
- Dagomar Degroot *The Frigid Golden Age: Climate Change, the Little Ice Age, and the Dutch Republic, 1560–1720*
- Edmund Russell *Greyhound Nation: A Coevolutionary History of England, 1200–1900*
- Timothy J. LeCain *The Matter of History: How Things Create the Past*
- Ling Zhang *The River, the Plain, and the State: An Environmental Drama in Northern Song China, 1048–1128*
- Abraham H. Gibson *Feral Animals in the American South: An Evolutionary History*
- Andy Bruno *The Nature of Soviet Power: An Arctic Environmental History*
- David A. Bello *Across Forest, Steppe, and Mountain: Environment, Identity, and Empire in Qing China's Borderlands*
- Erik Loomis *Empire of Timber: Labor Unions and the Pacific Northwest Forests*
- Peter Thorsheim *Waste into Weapons: Recycling in Britain during the Second World War*
- Kieko Matteson *Forests in Revolutionary France: Conservation, Community, and Conflict, 1669–1848*
- Micah S. Muscolino *The Ecology of War in China: Henan Province, the Yellow River, and Beyond, 1938–1950*
- George Colpitts *Pemmican Empire: Food, Trade, and the Last Bison Hunts in the North American Plains, 1780–1882*
- John L. Brooke *Climate Change and the Course of Global History: A Rough Journey*
- Paul Josephson et al. *An Environmental History of Russia*
- Emmanuel Kreike *Environmental Infrastructure in African History: Examining the Myth of Natural Resource Management*
- Gregory T. Cushman *Guano and the Opening of the Pacific World: A Global Ecological History*
- Sam White *The Climate of Rebellion in the Early Modern Ottoman Empire*
- Edmund Russell *Evolutionary History: Uniting History and Biology to Understand Life on Earth*
- Alan Mikhail *Nature and Empire in Ottoman Egypt: An Environmental History*
- Richard W. Judd *The Untilled Garden: Natural History and the Spirit of Conservation in America, 1740–1840*
- James L. A. Webb, Jr. *Humanity's Burden: A Global History of Malaria*

- Myrna I. Santiago *The Ecology of Oil: Environment, Labor, and the Mexican Revolution, 1900–1938*
- Frank Uekoetter *The Green and the Brown: A History of Conservation in Nazi Germany*
- Matthew D. Evenden *Fish versus Power: An Environmental History of the Fraser River*
- Alfred W. Crosby *Ecological Imperialism: The Biological Expansion of Europe, 900–1900, second edition*
- Nancy J. Jacobs *Environment, Power, and Injustice: A South African History*
- Edmund Russell *War and Nature: Fighting Humans and Insects with Chemicals from World War I to Silent Spring*
- Adam Rome *The Bulldozer in the Countryside: Suburban Sprawl and the Rise of American Environmentalism*
- Judith Shapiro *Mao's War against Nature: Politics and the Environment in Revolutionary China*
- Andrew Isenberg *The Destruction of the Bison: An Environmental History*
- Thomas Dunlap *Nature and the English Diaspora*
- Robert B. Marks *Tigers, Rice, Silk, and Silt: Environment and Economy in Late Imperial South China*
- Mark Elvin and Tsui'jung Liu *Sediments of Time: Environment and Society in Chinese History*
- Richard H. Grove *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600–1860*
- Thorkild Kjærgaard *The Danish Revolution, 1500–1800: An Ecobistorical Interpretation*
- Donald Worster *Nature's Economy: A History of Ecological Ideas, second edition*
- Elinor G. K. Melville *A Plague of Sheep: Environmental Consequences of the Conquest of Mexico*
- J. R. McNeill *The Mountains of the Mediterranean World: An Environmental History*
- Theodore Steinberg *Nature Incorporated: Industrialization and the Waters of New England*
- Timothy Silver *A New Face on the Countryside: Indians, Colonists, and Slaves in the South Atlantic Forests, 1500–1800*
- Michael Williams *Americans and Their Forests: A Historical Geography*
- Donald Worster *The Ends of the Earth: Perspectives on Modern Environmental History*
- Robert Harms *Games against Nature: An Eco-Cultural History of the Nunu of Equatorial Africa*
- Warren Dean *Brazil and the Struggle for Rubber: A Study in Environmental History*
- Samuel P. Hays *Beauty, Health, and Permanence: Environmental Politics in the United States, 1955–1985*
- Arthur F. McEvoy *The Fisherman's Problem: Ecology and Law in the California Fisheries, 1850–1980*
- Kenneth F. Kiple *The Caribbean Slave: A Biological History*

Cambridge University Press
978-1-108-47547-1 — Pipe Dreams
Maya K. Peterson
Frontmatter
[More Information](#)

Pipe Dreams

Water and Empire in Central Asia's Aral Sea Basin

MAYA K. PETERSON
University of California



CAMBRIDGE
UNIVERSITY PRESS

Cambridge University Press
 978-1-108-47547-1 — Pipe Dreams
 Maya K. Peterson
 Frontmatter
[More Information](#)

CAMBRIDGE UNIVERSITY PRESS

University Printing House, Cambridge CB2 8BS, United Kingdom
 One Liberty Plaza, 20th Floor, New York, NY 10006, USA
 477 Williamstown Road, Port Melbourne, VIC 3207, Australia
 314-321, 3rd Floor, Plot 3, Splendor Forum, Jasola District Centre,
 New Delhi – 110025, India
 79 Anson Road, #06-04/06, Singapore 079906

Cambridge University Press is part of the University of Cambridge.

It furthers the University's mission by disseminating knowledge in the pursuit of education, learning, and research at the highest international levels of excellence.

www.cambridge.org

Information on this title: www.cambridge.org/9781108475471

DOI: 10.1017/9781108673075

© Maya K. Peterson 2019

This publication is in copyright. Subject to statutory exception and to the provisions of relevant collective licensing agreements, no reproduction of any part may take place without the written permission of Cambridge University Press.

First published 2019

Printed in the United Kingdom by TJ International Ltd, Padstow Cornwall

A catalogue record for this publication is available from the British Library.

Library of Congress Cataloging-in-Publication Data

NAMES: Peterson, Maya K., author.

TITLE: Pipe dreams : water and empire in Central Asia's Aral Sea Basin / Maya K. Peterson, University of California, Santa Cruz.

DESCRIPTION: Cambridge, United Kingdom ; New York, NY : Cambridge University Press, [2019] | SERIES: Studies in environment and history | Includes bibliographical references.

IDENTIFIERS: LCCN 2018052005 | ISBN 9781108475471 (hardback) |

ISBN 9781108468541 (pbk.)

SUBJECTS: LCSH: Water resources development—Asia, Central. | Rural development—Asia, Central. | Asia, Central—History—20th century. | Soviet Union—Politics and government.

CLASSIFICATION: LCC HD1698.A783 P48 2019 | DDC 333.91009587—dc23

LC record available at <https://lccn.loc.gov/2018052005>

ISBN 978-1-108-47547-1 Hardback

Cambridge University Press has no responsibility for the persistence or accuracy of URLs for external or third-party internet websites referred to in this publication and does not guarantee that any content on such websites is, or will remain, accurate or appropriate.

To my parents, for being my original source of inspiration.

Cambridge University Press
978-1-108-47547-1 — Pipe Dreams
Maya K. Peterson
Frontmatter
[More Information](#)

Contents

<i>List of Figures</i>	<i>page</i> xi
<i>Acknowledgments</i>	xv
<i>Note on People, Places, and Institutions</i>	xxi
Introduction	I
1 The Land beyond the Rivers: Russians on the Amu Darya and Syr Darya	27
2 Eastern Eden: Irrigation and Empire on the Hungry Steppe	72
3 To Create a New Turkestan: Water Governance in the Irrigation Age	118
4 The Land of Bread and Honey? Settlement and Subversion in the Land of Seven Rivers	164
5 Sundering the Chains of Nature: Bolshevik Visions for Central Asia	215
6 From Shockwork to People's Construction: Socialist Labor on Stalin's Canals	265
Epilogue: The Fate of the Aral Sea	320
Conclusion	334
<i>Glossary</i>	339
<i>Bibliography</i>	345
<i>Index</i>	371

Cambridge University Press
978-1-108-47547-1 — Pipe Dreams
Maya K. Peterson
Frontmatter
[More Information](#)

List of Figures

- | | | |
|-----|---|---------|
| 1.1 | Map of Turkestan under Russian rule, c. 1900.
Map by Bill Nelson. | page 10 |
| 1.1 | Butakov's map of the Aral Sea, based on his first expedition in 1848–1849, published by the Royal Geographical Society of London in 1853 to accompany "Survey of the Sea of Aral" (<i>JRGS</i> 23 [1853]) by Commander Alexey Butakoff. Historical Maps of Russia and the Former Soviet Republics, Perry-Castañeda Library Map Collection, University of Texas at Austin. | 29 |
| 1.2 | Chigir. Reproduced with permission from the Willard L. Gorton Papers, Hoover Institution Archives, Stanford, CA. | 61 |
| 2.1 | The Hungry Steppe, early twentieth century.
Map by Bill Nelson. | 84 |
| 2.2 | Types of workers. "Tipy rabochikh," photograph No. 21 in <i>Raboty po orosheniiu 45,000 ga. v Golodnoi Stepi</i> [<i>Work on the Irrigation of 45,000 Hectares in the Hungry Steppe</i>] (1901–1902), 13. Reproduced with permission of the Rare Books Section of the Alisher Navoi State Library, Tashkent, Uzbekistan. | 86 |
| 2.3 | Nikolaevskoe peasants and Central Asians working on the irrigation of the Hungry Steppe. "Gruppa krest'ian Nikolaevskogo poselka rabotaiushchikh na magistral'nom kanale," photograph No. 19 in <i>Raboty po orosheniiu 45,000 ga. v Golodnoi Stepi</i> , 4. Reproduced with permission of the Rare Books Section of the Alisher Navoi State Library, Tashkent, Uzbekistan. | 89 |

- 2.4 Likely a photograph of Nazarmat vazir, one of Nikolai Konstantinovich's longtime servants and main assistant in irrigating the Hungry Steppe. Sergei Mikhailovich Prokudin-Gorskii, photographer. *Nazar Magomet. Golodnaia step'* [Between 1905 and 1915]. Photograph from the Prokudin-Gorskii Collection at the Library of Congress. www.loc.gov/item/prk2000001565/. 104
- 3.1 Cotton in front of the house of a settler in Veliko-Alekseevskoe in the Hungry Steppe. Photograph No. 13 in *Vidy zaseliaemoi chasti Golodnoi Stepi* [*Views of the Settled Part of the Hungry Steppe*], 7. Reproduced with permission of the Rare Books Section of the Alisher Navoi State Library, Tashkent, Uzbekistan. 125
- 3.2 Cotton from the state plantation. Photograph No. 32 in *Vidy zaseliaemoi chasti Golodnoi Stepi*, 16. Reproduced with permission of the Rare Books Section of the Alisher Navoi State Library, Tashkent, Uzbekistan. 141
- 3.3 Public prayer at the opening of the Romanov Canal, 1913. "Molebstvie." Photograph No. 2 in the photo album *Vidy torzhestvennogo otkrytiia Romanovskogo orositel'nogo kanala v Golodnoi Stepi 5 oktiabria 1913* [*Views of the Celebratory Opening of the Romanov Irrigation Canal in the Hungry Steppe, 5 October 1913*], 1. Reproduced with permission from the Rare Books Section of the Alisher Navoi State Library, Tashkent, Uzbekistan. 158
- 4.1 Pastoralist women milking. Reproduced with permission from the Willard L. Gorton Papers, Hoover Institution Archives, Stanford, CA. 166
- 4.2 Map of the Chu River Valley in the early twentieth century, showing Engineer Vasil'ev's projections for irrigated areas (regions A–E), as well as the general locations of Kyrgyz volosts in the region of the Chu River Valley Irrigation Project. Map by Bill Nelson. 171
- 4.3 Semireche Cossack officers. From the album *Vidy Semirech'ia i Kul'dzhi* [*Views of Semireche and Kulja*], 5. Reproduced with permission of the Rare Books Section of the Alisher Navoi State Library, Tashkent, Uzbekistan. 193
- 5.1 Khivan irrigation official. [1920s?] "Native engineer, the chief irrigator of the Khivinsky khan." Reproduced with

List of Figures

xiii

- | | |
|---|-----|
| permission from the Willard L. Gorton Papers, Hoover
Institution Archives, Stanford, CA. | 225 |
| 5.2 Cotton bazaar, Old Andijan (Soviet postcard). Reproduced
with permission from the Willard L. Gorton Papers, Hoover
Institution Archives, Stanford, CA. | 250 |
| 6.1 Map of Soviet Central Asia, 1940s. Map by Bill Nelson. | 270 |
| 6.2 An imported German Menk excavator at work in the
Vakhsh Valley, 1930s. From the photo album <i>Vakhshskoe
 irrigatsionnoe stroitel'stvo v Tadzhikskoi SSR</i> [<i>Vakhsh
 Irrigation Construction in the Tajik SSR</i>], RGAE f. 8390,
op. 1, d. 1098, l. 5. Reproduced with permission from the
Russian State Archive of the Economy. | 291 |
| 6.3 Meeting on the [Vakhsh Canal] headworks, 1930s.
From the photo album <i>Vakhsh Irrigation Construction in the
 Tajik SSR</i> , RGAE f. 8390, op. 1, d. 1098, l. 100b.
Reproduced with permission from the Russian State Archive
of the Economy. | 307 |

Cambridge University Press
978-1-108-47547-1 — Pipe Dreams
Maya K. Peterson
Frontmatter
[More Information](#)

Acknowledgments

Just as a river on its way to the sea acquires water from many different tributaries, so this book has been influenced by many different sources on its journey to its final destination, a journey that has spanned many years and half the globe. Taking on and finishing such an endeavor was made possible by the support of a vast number of colleagues and friends. Many academic communities have made this book far better, and for that I am infinitely grateful. There is not enough space here to acknowledge every contribution in so many words, but these acknowledgments are, first and foremost, a thank-you to everyone who has helped this book to completion, in ways both big and small.

My interest in Russian history began in high school, when I took the last class that Peter Viereck ever taught at Mount Holyoke College. The following fall, I showed up at Swarthmore College, ready to tackle not only Russian history, but also the Russian language. My Swarthmore professors, including Sibelan Forrester, Bruce Grant, Pieter Judson, and Bob Weinberg, have remained generous mentors through the years. In a master's program at Harvard University, I began learning Uzbek with Gulnora Aminova, and I first encountered the Aral Sea in a class taught by Laura Adams. The Davis Center for Russian and Eurasian Studies, which provided a wonderful academic home over many years, funded my first trip to the Aral Sea basin that summer.

The following fall, Terry Martin's graduate seminar on Soviet history confirmed my desire to pursue a PhD in Russian and Soviet history. Terry was a wonderful graduate advisor and mentor; he encouraged me to follow my instincts and was this project's first champion. David Blackburn introduced me to environmental history, and though I abandoned

my initial plan of writing about a river for his seminar in German history, the idea never quite went away. Over my years at Harvard, members of the Russian and East European History, Frontiers of Eurasia, Central Eurasian Studies, and Center for History and Economics workshops gave the project important critiques and helpful suggestions. Thanks go in particular to Greg Afinogenov, Misha Akulov, Bryan Averbuch, Johanna Conterio, Kathryn Dooley, Jeff Eden, Philippa Hetherington, Tom Hooker, Brendan Karch, Beth Kerley, Philipp Lehmann, Carolin Roeder, Andrey Shlyakhter, Josh Specht, Shirley Ye, and Jeremy Zallen. My thanks go also to my committee members Mark Elliott and Kelly O'Neill, and to John LeDonne for his careful reading of my work in its early stages.

Steve Caton and Ben Orlove provided direct inspiration for this work when they organized a Social Science Research Council (SSRC) Dissertation Proposal Development Fellowship (DPDF) workshop in 2007 around the theme “Water Sustainability.” They taught me that water can and should be an object of inquiry, and continued to be mentors long after the workshop was finished. The DPDF program provided me with funding for a first foray into the archives, during which I discovered many of the elements at the core of this book. Without a doubt, this book would not be the same without that grant.

The bulk of the research for this book was funded by a year-long Fulbright-Hays Doctoral Dissertation Research Abroad fellowship, which provided a key support network on the ground in Moscow and Central Asia through the Fulbright program, its staff, and embassy connections. An SSRC International Dissertation Research Fellowship allowed me to spend additional time in the region, including two months in Uzbekistan, where I was able to make good use of my time in the excellent libraries while waiting for permission to access the archives. Hearty thanks go to Scott Levi for helping me to secure affiliation with the Uzbek Academy of Sciences during my stay in Tashkent. The staffs at the State Archives in Tajikistan, Kyrgyzstan, Kazakhstan, and Uzbekistan, as well as the staff at the Central State Archive of Political Documentation of the Kyrgyz Republic, were generous and welcoming, even when sometimes faced with limited resources and political pressures over allowing foreign researchers to do research in their reading rooms. In Russia, archivists at the Russian State Archive of Socio-Political History (RGASPI) and the Russian State Archive of the Economy (RGAE) were particularly helpful, while the staff at the Russian State Historical Archive (RGIA) made the newly reopened archive a delightful place to work.

Acknowledgments

xvii

Throughout my research travels, many people assisted and inspired me, kept me grounded, and made sure I had a roof over my head, including, in Dushanbe: Jessica Abenstein, Shahodat Umarova, Lisa Walker, Lisa Yountchi; in Bishkek: Medina Aitieva, the Beshimov family, Tricia Ryan, Jeff Sahadeo, Amanda Wetsel; in Almaty: Susie Armitage, David Brophy, Del Schwab, and Kadyr Toktogulov; in Moscow: Geoff and Naomi Anisman, Sam Hirst, Christine LeJeune; in St. Petersburg: the Afonins, Hassan Malik, Jennifer Siegel, Mark Soderstrom; and in Tashkent: Alisher Sobirov, Shukhrat Mukhamedov, Sardor Djurabaeov, and Jalol Nasirov. Special thanks to Jalol, not only for providing help and good company in the early days of this project, but more recently for securing duplicates of the photographs from the rare books section of the Alisher Navoi State Library of Uzbekistan that appear in this book.

On my return to the United States, an SSRC Eurasia fellowship gave me uninterrupted writing time to finish my dissertation. My cohort of SSRC Eurasia fellows, in particular Pey-Yi Chu, gave vital feedback in the last stages of writing the dissertation. Harvard's Department of the History of Science gave me a place to land in the months after dissertation completion. I am indebted to my colleagues there, including Janet Browne, Anne Harrington, and Alistair Sponsel, who provided a wonderful entrée into the world of the history of science.

The following year, the Rachel Carson Center for Environment and Society at Ludwig-Maximilians-Universität in Munich, Germany, provided a stimulating environment – including field trips to the local beer gardens! – in which to begin the process of turning a PhD dissertation into a book. Thanks to Christof Mauch and Helmuth Trischler for their support for this project, to the countless wonderful fellows and visiting scholars who provided feedback and inspiration during my stints at the RCC between 2012 and 2014, and the amazing RCC staff, especially Annka Liepold. Through the RCC, I became involved in the European Society for Environmental History, as well as the International Water History Association, both of whose members have provided thoughtful and engaged audiences for my work, as well as a host of interlocutors around the world. While in Germany, I was fortunate to be not far from Julia Obertreis, who generously shared materials and read chapter drafts. Her recent book provides a valuable contribution to the history of water management in Central Asia, shedding light on aspects of that history which do not appear in this book.

In addition to the scholars mentioned above, numerous scholars of Russian and Soviet history, Central Asia, environmental history, and the

history of science and technology have shared ideas and materials, given feedback, helped to organize conference panels and workshops, and provided collegiality in what otherwise might be the lonely academic world of the historian who spends her time buried in the archives and working on monographs. So thanks to Christine Bichsel, Christian Bleuer, Nick Breyfogle, Andy Bruno, Sarah Cameron, Ian Campbell, Bathsheba Demuth, Maurits Ertsen, Krista Goff, Loren Graham, Ryan Jones, Stephen Jones, Paul Josephson, Marianne Kamp, Botakoz Kassymbekova, Adeeb Khalid, Julia Lajus, Ben Loring, David Moon, Douglas Northrop, Patryk Reid, Alan Roe, Lewis Siegelbaum, and Christian Teichmann. I am especially grateful to the scholars who read a full draft of the manuscript as part of a Junior Faculty Manuscript Workshop sponsored by the University of California's Humanities Research Institute in Fall 2017: Jonathan Beecher, Choi Chatterjee, Adrienne Edgar, Peter Kenez, Louis Warren, and Paul Werth. (Thanks, too, to Melissa Brzycki for taking excellent notes on the proceedings!) Their advice improved the manuscript immensely; I hope I have done their comments justice. Thanks to John McNeill and Ed Russell for nudging me to submit the manuscript to Cambridge University Press, to Debbie Gershenowitz for agreeing to take on this project, and to all three editors, as well as the two anonymous readers, for helping me to realize that less can indeed be more. Thanks, too, to Rachel Blaifeder and Julie Hrischeva for help with images, and to Bill Nelson for the maps.

I am very lucky to have spent the last six years among brilliant, thoughtful, and generous colleagues in the History Department and surrounding academic community at the University of California, Santa Cruz. UCSC provided me with the opportunity to take the postdoctoral fellowship at the Rachel Carson Center and financed further research and writing through a generous start-up package. The Humanities Institute at UCSC provided funding and a course release to allow time to work on revisions and the maps that appear in this book. During my time at UCSC, colleagues and friends in Santa Cruz have provided not only indispensable advice, but also indispensable friendship and ever-welcome distraction, accompanied by copious amounts of home-cooked food, wine, laughter, and solace. Thanks, especially, to Anna Barry-Jester, Dorian Bell, Emily Bondor, Tim Bragg, Vilashini Cooppan, Jennifer Derr, Renee Fox, Alma Heckman, Daniel Hermstad, Sikina Jinnah, Kate Jones, Sharon Kinoshita, Marc Matera, Samantha Matherne, Grant McGuire, Greg O'Malley, Katrina Ricca, Juned Shaikh, Elaine Sullivan, Zoe Whitehouse, and Zac Zimmer. Marm Kilpatrick has not only been part of all

Acknowledgments

xix

this, but he made even the last, tedious months of revisions more joyful than I could have imagined, remaining equal parts enthusiastic and patient, while also providing the gentle prodding to get the book done so we can have more adventures. It is hard to be away, but I am exceedingly grateful to Klaus Gestwa for giving me the chance to put the finishing touches on this book in the charming university town of Tübingen, Germany.

Last, but certainly not least, no part of this would have been possible without my parents, Indira and Mark Peterson, who remain my biggest inspiration. They have always encouraged without pushing, supported without questioning, and provided models of scholarship to which I continue to aspire. They read every word of this book in an earlier form, and it is to them that I dedicate this final version.

Cambridge University Press
978-1-108-47547-1 — Pipe Dreams
Maya K. Peterson
Frontmatter
[More Information](#)

Note on People, Places, and Institutions

This book uses the term *Central Asia* for the region described by the Soviet concept of Central Asia (the area comprised by the Uzbek, Turkmen, Tajik, and Kyrgyz Soviet Socialist Republics, along with the southern part of the Kazakh SSR), and *Central Asians* to refer to the indigenous people who inhabited the region (Kazakhs, Kyrgyz, Tajiks, Turkmen, Uzbeks, and others) in both the tsarist and Soviet periods. Likewise, *Russians* or *Slavs* is used as a shorthand to describe people coming from central parts of the empire, either in an official or unofficial capacity, to the Central Asian borderlands, though many of these people, including the governors of the Central Asian province of Russian Turkestan, were Baltic Germans or may have been ethnically Slavic, but not Russian (e.g., Ukrainians or Poles). *Russian Turkestan*, *Turkestan*, and *Turkestan krai* [border region] all refer to the region under direct Russian rule in the imperial period (that is, excluding the autonomous protectorates of Bukhara and Khiva). *Central Eurasian* describes a broader territory, including the protectorates, the Kazakh Steppe, and regions that were generally beyond the boundaries of the Russian Empire and Soviet Union, such as Persia (Iran), Afghanistan, and the Xinjiang province of northwest China.

In terms of spelling, I have generally used transliterations commonly used in English-language publications for names of places and peoples that may be familiar to the audience (e.g., Amu Darya, rather than Amu Daria; Ferghana, rather than Farghona; Kazakh, rather than Kazak or Qazaq; Bukhara, rather than Bukhoro), but I have taken the liberty of spelling other place names with transliterations that better approximate their Central Asian spellings, rather than the Russified versions of those

names: e.g., Qurghonteppa for Kurgan-Tiube, Qaraqalpaq for Karakalpak, Qara Qum for Karakum. There were, of course, still choices to make. The oasis of Khorezm, for instance, may be spelled Khwarezm or Khoesm (in addition to many other spellings). In all cases, I have tried to be consistent.

Throughout this work, for simplicity, I refer to the Ministry of Agriculture, although this institution underwent several important name changes between the late nineteenth and the first half of the twentieth centuries. What was the imperial Ministry of Agriculture and State Domains (Ministerstvo Zemledeliia i Gosudarstvennykh Imushchestv) was reorganized in 1905 into the Main Administration of Land Management and Agriculture (Gosudarstvennoe Upravlenie Zemleustroistva i Zemledeliia, often abbreviated GUiZ). Turkestan gained its own branch of the ministry in 1897; that branch, however, retained the title of Administration of Agriculture and State Domains through the end of the imperial period. In 1915, GUiZ became the Ministry of Agriculture (Ministerstvo Zemledeliia). After the Bolshevik Revolution, the tsarist-era Ministry of Agriculture became the People's Commissariat of Agriculture. Throughout, I have given the commonly used abbreviated version of Soviet ministries (people's commissariats) when they first appear – for instance, the People's Commissariat of Agriculture (Narodnyi Kommissariat Zemledeliia) was typically referred to by its abbreviation, Narkomzem – but I have otherwise used their English translations, for those not familiar with these abbreviations or the Russian language. I have translated the tsarist-era Otdel Zemel'nykh Uluchshenii (OZU), a department of the Ministry of Agriculture, literally as Department of Land Improvement, rather than Department of Reclamation, since the term *melioratsiia* was coming to be used more frequently to mean “reclamation” in the twentieth century. Explanations of Russian and Central Asian terms that appear frequently in this work can be found in a separate glossary.